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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/098,569	03/18/2002	Ryuji Biro	03500.016291	3198
5514	7590	04/01/2004	EXAMINER	
FITZPATRICK CELLA HARPER & SCINTO			PADGETT, MARIANNE L	
30 ROCKEFELLER PLAZA			ART UNIT	
NEW YORK, NY 10112			PAPER NUMBER	
			1762	
DATE MAILED: 04/01/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/098,569

Applicant(s)

BIRO ET AL.

Examiner

Marianne L. Padgett

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1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 14 October 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) 1-6 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 7 and 8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

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1. With the respect to applicant's rejoinder request, the process claimed required use of particular deposition materials that are NOT part of the apparatus, hence the process required different considerations for allowability than the apparatus, or different scopes, hence would be improper to rejoin under MPEP 821.04 as requested, especially as all the apparatus structure stands rejected in the previous action, with all amendments in the 10/14/03 response directed to method limitations, so the sets of claims are not commensurate in scope.

2. The disclosure is objected to because of the following informalities: problems as previous noted remain. Specification needs proof reading, especially for non-idiomatic English problems as described in the claims in section 2 of paper# 8 mailed 7/8/03.

Appropriate correction is required.

3. Claims 7-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 7, lines 8-9 remain ambiguous as the phrase "an ionization means which ionizes by the plasma" (emphases added) is still possibly saying that some other or more remote outside the reaction chamber plasma is being used. Now as amended "the plasma. . .to form a plasma..." is claimed! Possible alternative phrasing consistent with flow chart of Fig 2 and alternative of present phrasing that applicants might consider includes: --an ionization means that forms a plasma that ionizes a source gas containing. . .to form a fluorine gas-containing plasma. . .-- or possibly --an ionization means which forms a plasma, and a means for inputting a source gas containing fluorine gas into the plasma, to form a fluorine...plasma--. However, in neither example 3 (p. 19-20), nor Ex.4 (p. 22-23) is the source gas input into an already formed plasma,

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but a gas mixture (He-F<sub>2</sub> or Ar-F<sub>2</sub>, respectively) is input into the reaction chamber, then the ionization means (exemplified by a microwave source) is used to form a plasma and thus ionize the gas mixture (source gas). So to be consistent with the cited example, applicant might consider language such as --an ionization means that ionizes a source gas containing fluorine gas to form plasma for...-- or the like. Phrasing-wise, these are somewhat subtle differences, but they encompass very different actions with the process of the plasma, its formation and use, hence clarification & clarity is needed.

4. Claims 7-8 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The examiner did not see any discussion of "vapor subject to scattering during vacuum deposition . . ." on the pages cited for support, nor any discussion of it elsewhere. Exactly what does applicant intend by this phrase? Scattering (i.e. dispersal) of vapor may cause deposits on surface other than the substrate to occur, but where in the specification is "scattering" shown to cause defects or that they can be corrected by just ionized F- containing gas? The Examiner notes that scattering of vapor relates to its physical distribution and has nothing necessarily to do with the vapor's microstructure or stoichiometry. Problems or defects in the stoichiometry would be what F-containing plasma in a fluoride film deposition would have been expected to correct.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harano et al (5,009,422) or Iacovangelo et al (6,365,016 B1), in view of Pinkhasov (4,609,564) as discussed in section 7 of paper#8, mailed 7/8/03, and further in view of the Japanese patent to Toku et al (JP3-075,359A or JP3-075,358A) and Bunshah (Handbook . . .).

Applicant's have amended their claims to require that their deposition material be a fluoride, and the gas used contain F, in order to deposit a fluoride film instead of generic materials previously claimed. The rejection of Harano et al or Iacovangelo et al, in view of Pinkhasov concerned oxide depositions instead of fluorides, however as seen in the discussion on evaporation techniques in the Handbook edited by Bunshah, evaporation techniques are applicable to both oxide and fluoride compounds (p. 182), with it known that deficiencies may result and be corrected by introducing a gas of the deficient element. Pages 187-197 discuss various reactions, and activated reactive (i.e. uses plasma) techniques for deposition, with the paragraph bridging p. 194-195, noting that the evaporation material employed may be either metal alloys or compounds. Thus Bunshah provide general motivation to use processes as described in Harano et al or Iacovangelo et al in view of Pinkhasov for alternate materials, such as fluorides.

Toku et al, as described in the English abstracts (translations have been ordered, but not yet received when this action was written), evaporates a fluoride-containing deposition material, while simultaneously employing a gas reactant, such as SF<sub>6</sub>, that is employed to prevent the film

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formed from having a F-deficiency. Given the teachings of Bunshah, it would have been obvious to employ the materials of Toku et al in the activated reaction deposition process of the primary references, as combined with Pinkhasov, due to the showings of equivalent usage in Bunshah, as well as discussion on p. 191 (middle) that indicates that the activated reactive (ARE) processes, as compared to the reactive (RE) processes, make better utilization of gas in the presence of a plasma, hence Toku et al's use of gas to prevent deficiencies would have been expected to have been more effective and/or efficient in the activated plasma gas.

7. Claims 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Delozanne (5,004,721), in view of Noda et al (5,284,824) or visa versa, as discussed in section# 9 of paper# 8, and further in view of Toku et al and Bunshah as discussed above in section 6.

8. Other art of instant concerning fluoride PVD processes included: Lowe et al (6,315,873 B1), Kawamata et al (6,210,542 B1), Sone (6,200,431 B1); and Tanaka et al (JP1-166,911), which use sputtering processes ; Seeser et al (5,618,388) which discusses various alternative techniques; and Okamoto et al (4,950,642) or Temple et al (4,882,198) which relate to the evaporation process in the above rejection (and claims) teaching reactive alternative depositions including fluoride, but do not discuss starting with the fluoride.

9. Applicant's arguments with respect to claims 7-8 have been considered but are moot in view of the new ground(s) of rejection.

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

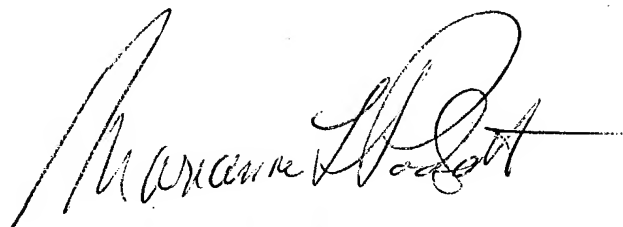
11. Any inquiry concerning this communication should be directed to Marianne L. Padgett at telephone number (571) 272-1425 on M-F from about 8:30 am - 4:30 pm, & FAX#(703) 872-9306 (all official).

M. L. Padgett/af

March 10, 2004

PS: The ordered translations for JP01-166,911; JP3-75358 & JP3-75359 have been received & enclosed with this action, but not yet reviewed by the examiner. It is noted that names of the inventors are translated differently, so apparently Akiyoshi Shin et al  $\equiv$  Akihiko Toku et al.

March 26, 2004/MLP



MARIANNE PADGETT  
PRIMARY EXAMINER